

Concordia
UNIVERSITY




CONCAVE

**RESEARCH
CENTRE**

Dept. of Mechanical Engineering






CONCAVE (CONcordia Computer Aided Vehicle Engineering) Research Centre, founded in 1985, specializes in research and development, industrial collaborative projects, consultant services, software development, simulation, design and testing in the field of Vehicle Technology. The centre was established as a centre d'Excellence through a special \$1.30 million dollars grant from the Government of Québec.

MISSION

- To provide research and development leadership in Vehicle Technology.

OBJECTIVES

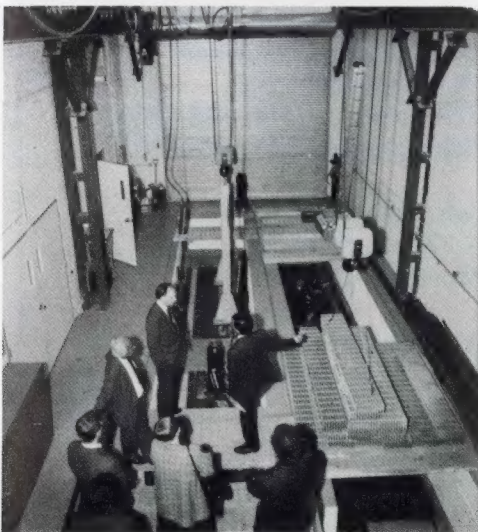
- To develop safe and efficient transport systems through fundamental and applied research.
 - To develop software packages for analysis, design and testing of vehicle systems.
 - To assist industries in acquiring new technologies and to provide technology transfer.
 - To train professionals and students in the various domains of Vehicle Engineering.
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RESOURCES

CONCAVE's current funding through grants and contracts exceeds one million dollars per annum. The centre has approximately 35 engineers, designers and other technical personnel.

The centre has a unique vehicle test facility equipped with 5 electro-hydraulic servo-actuators that can accommodate automobiles, trucks, buses and other structures up to $6\text{ m} \times 18\text{ m}$ ($20\text{ ft} \times 60\text{ ft}$) in dimensions and gross weight up to 100 kN (45,000 lb) for vibration testing and real time simulation. The centre also is equipped with instrumentation, data recording and analysis systems to carry out both laboratory and field testing.

Its computing facilities include main-frame, workstations, minicomputers and microcomputer and run several engineering software packages for design, analysis and simulation.



SERVICES

In the last four years, the centre has collaborated with over forty (40) industries and government organizations on numerous projects. The most important services that CONCAVE has provided to-date are the following:

- Systematic Analytical Development
- Modal Testing and Analysis
- Computer Simulation
- Design Refinement
- Structural Analysis and Design
- Vibration Testing of Vehicle Structures and Suspension
- Field Measurement of Vibrations
- Development of User Friendly Computer Software with Computer Graphics Enhancement.
- Training
- Technical Assistance
- Project Management
- Feasibility Study





RECENT PROJECTS

- Computer-Aided Design software for Snowmobile Suspension Design. Software: GENKAD
- Automated Finite Element Re-analysis of Commercial Tank Vehicle-Body Design. Software: AUTOFER
- A General Purpose Ride Dynamic Analysis Software for Tracked Vehicles Software: TANKDYN
- Simulation Software for Evaluating Stability of heavy Articulated Liquid Tank Vehicles.
- Ride Dynamics of Heavy Articulated Vehicle: Software: TRIDE
- Optimal Design of Vehicle Structure using Computer Aided Design, Finite Element Analysis and Modal Testing.

**For further information,
please contact:**

CONCAVE Research Centre
Dept. of Mechanical Engineering
Concordia University

Civic Address:

6277 St-Jacques Street West
Montréal (Québec)

Mailing Address:

1455 de Maisonneuve Blvd. West
Annex CR-200, Montréal (Québec)
Canada H3G 1M8

